SSW21G1 Tech Sheet

Customer: **Balboa Water Group**

Part Number: 59317-01 825 Incoloy 3.0kW
59114-01 Titanium 3.0kW

Custom Box Overlay ☐

Box Overlay Part Number N/A

CE System Model: BP21-SSW21G1-RCA3.0K

Software Version ID: M100_225 V66.0

Software Version: 66.0

File Name: BP2100_66.0_SSW21G1.hex

Configuration Signature: 04FEDC65

Eng. Project Number: 5663

Control Panels:

spaTouch™3 Any version (version 3.2 or later required for Clim8zone™ heat pump support)

spaTouch™2 Swim verison 2.32 or later required for swim functions (only one of these can be used per pack);
version 2.36 or later required for Clim8zone™ heat pump support)
Swim-aware spa-side version 2.32 or later optional as second panel; version 2.36 or later required for Clim8zone™ heat pump support

System Revision History

Part #	EPN	Date	Originator	Changes Made
59113 59114	5209	04-23-19	BWG	Generic BP2100-based SmartSwim™ system, with up to 3 2-Speed Pumps, plus optional Circ.
59317	5302	12-05-19	BWG	Add PN for 825 Incoloy version. Discontinue 800 Incoloy version PN 59113.
59317-01 59114-01	5663	06-23-22	BWG	Update to support Clim8zone™ heat pump. Update transformer fuse.

bba™2 / bba™3 (Balboa Bluetooth Amp) connection is documented separately.

bba™2 / bba™3 is integrated into graphic display panels (including spaTouch™).

Basic Functions Setup 1-12

Power Requirements:

Single Service [3 wires (line, neutral, ground)]
230VAC, 50/60Hz*, 1þ, 32A, (Circuit Breaker rating = 40A max.)

Dual Service N/A

3-Service [5 wires (line 1, line 2, line 3, neutral, ground)]
230VAC line-to-neutral**, 50/60Hz*, 3þ, 16A, (Circuit Breaker rating = 20A max each phase line.)

HiPot Testing Note:
Disconnect slip terminal with green wires from J6 prior to performing HiPot test. Failure to disconnect may cause a false failure of the test. Reconnect terminal to J6 after successful completion of HiPot test.

* BP systems automatically detect 50Hz vs 60Hz. However, power frequency (50Hz vs 60Hz) is just one of many differences between North American (UL) and CE power, and it is because of these other differences that different BP systems must be used for UL vs CE territories. Also, there are a few countries that use CE power but 60 Hz (such as South Korea) which need CE systems, and a few countries that use UL power but 50 Hz which need UL systems.

** 3-phase service measured line-to-line will read about 400V, but BP systems do not use it line-to-line.

IMPORTANT - Service must include a neutral wire, with a line to neutral voltage of 230VAC.

BALBOA water group

Basic Functions Setup 1-12

System Ouputs:

Pump 1	230VAC	2-Speed	9.2A max*	15-minute timer for High Speed, 15-Minute timer for Low Speed This is the heater pump in Setups 3, 4 & 10 - 12 Must deliver 20 GPM through heater
Pump 2	230VAC	2-Speed	9.2A max*	15-minute timer
Pump 3	230VAC	2-Speed	9.2A max*	15-minute timer
Circ Pump	230VAC	1-Speed	2A max	Programmable Filtration Cycles + Polling This is the heater pump in Setups 1, 2 & 5 - 9 Must deliver 20 GPM through heater
Ozone	230VAC		.5A max	Slaved to Circ Pump in Setups 1, 2, 5 - 9 Independent in Setups 3, 4 & 10 - 12
Spa Light	10VAC	On/Off	2A** max	240-minute timer.
AV + C8Z***	230VAC	Hot	2A+8A max	Always on
Heater	3.0kW @ 240VAC max			

* See Setup Chart (page 7) as to which pumps are swim pumps in each Setup, and as to whether there is a buoyancy pump.
All swim pumps must be identical.

If not using Circ Pump and/or not using A/V, then the pumps can be a bit more than 9.2A each, as long as everything at 230V adds up to 32A max.
In Setups 5 & 10 which have only two pumps, each pump can be 12A max.

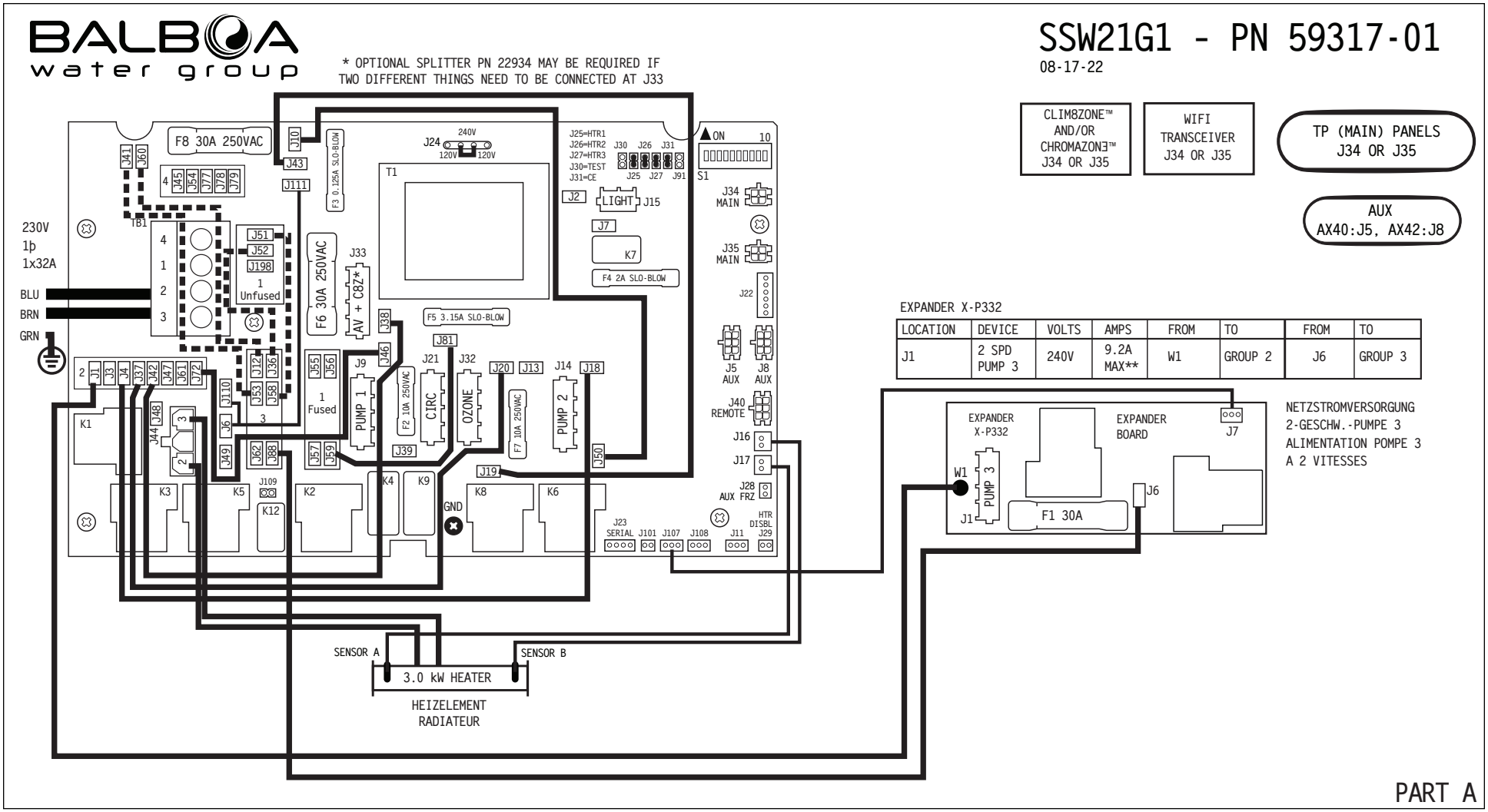
** 2A max limit is shared by On/Off Spa Light and CHROMAZON∃™.

*** Optional splitter PN 22934 can be used to connect two things, such as an audio device and Clim8zone™(C8Z), to J33.

BALBOA water group

Hardware Setup

Wiring Diagram



EXPANDER X-P332

LOCATION	DEVICE	VOLTS	AMPS	FROM	TO	FROM	TO
J1	2 SPD PUMP 3	240V	9.2A MAX**	W1	GROUP 2	J6	GROUP 3

Hardware Setup

Settings

SINGLE SERVICE 230V 1þ / 1x32A, THREE-SERVICE 230V 3þ / 3x16A

LOCATION	DEVICE	MAX AMPS
J9	NETZSTROMVERSORGUNG 2/1-GESCHW.-PUMPE 1 ALIMENTATION POMPE 1 A 2/1 VITESSES 2/1-SPD PUMP 1	9.2A MAX**
J14	2-SPD PUMP 2 NETZSTROMVERSORGUNG 2-GESCHW.-PUMPE 2 ALIMENTATION POMPE 2 A 2 VITESSES	9.2A MAX**
J15	10V BELEUCHTUNG ECLAIRAGE BAIN HYDRO SPA LIGHT	2A* (@10V)
J21	KREISLAUF PUMPE POMPE DE CIRCULATION CIRC PUMP	2A
J32	OZONGENERATOR GENERATOROZONE OZONE GENERATOR	0.5A
J33	AV + CLIM8ZONE™ (C8Z)	2A + 8A
J44	HEATER	3.0kW

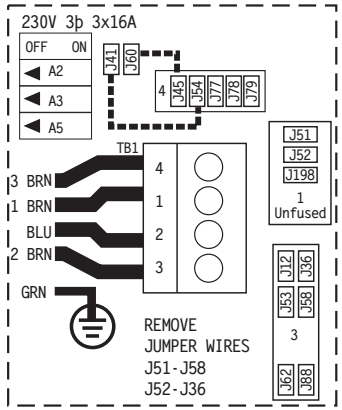
* 2A LIMIT IS SHARED BY J15 SPA LIGHT AND CHROMAZONE™

** ALL SWIM PUMPS MUST BE IDENTICAL. IN SETUPS 5 & 10 WHICH HAVE ONLY TWO PUMPS, PUMPS 1 AND 2 CAN BE 12A MAX EACH.

SWITCHBANK S1 OFF / SWITCHBANK S1 ON

TEST MODE OFF	◀ A1	TEST MODE ON
DON'T ADD 1 HS PUMP W/HTR	A2 ▶	ADD 1 HS PUMP WITH HEAT
DON'T ADD 2 HS PUMPS W/HTR	◀ A3	ADD 2 HS PUMPS WITH HEAT
DON'T ADD 4 HS PUMPS W/HTR	◀ A4	ADD 4 HS PUMPS WITH HEAT
SPECIAL AMPERAGE RULE A	◀ A5	SPECIAL AMPERAGE RULE B
STORE SETTINGS*	◀ A6	MEMORY RESET*
1 MIN HTR COOLDOWN (ELEC)	◀ A7	5 MIN HTR COOLDOWN (GAS)
NOT ASSIGNED	◀ A8	NOT ASSIGNED
NOT ASSIGNED	◀ A9	NOT ASSIGNED
NOT ASSIGNED	◀ A10	NOT ASSIGNED

*SWITCH # 6 SHOULD BE SET TO OFF UPON FINAL INSTALLATION.



SETUP #	CIRC PUMP	PUMP 1	PUMP 2	PUMP 3	SWIM SPEEDS	SWIM PUMPS	PUMP 1 FUNCTION	TEMP SCALE
1	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	6	1 - 3	SWIM	°C
2	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	5	1 - 3	SWIM	°C
3	NONE	2-SPEED	2-SPEED	2-SPEED	6	1 - 3	SWIM	°C
4	NONE	2-SPEED	2-SPEED	2-SPEED	5	1 - 3	SWIM	°C
5	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	NONE	4	1 - 2	SWIM	°C
6	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	4	2 - 3	BUOYANCY	°C
7	PROGRAMMABLE FILTRATION + POLLING	1-SPEED	2-SPEED	2-SPEED	4	2 - 3	BUOYANCY	°C
8	PROGRAMMABLE FILTRATION + POLLING	2-SPEED	2-SPEED	2-SPEED	4	2 - 3	NON-SWIM	°C
9	PROGRAMMABLE FILTRATION + POLLING	1-SPEED	2-SPEED	2-SPEED	4	2 - 3	NON-SWIM	°C
10	NONE	2-SPEED	2-SPEED	NONE	4	1 - 2	SWIM	°C
11	NONE	2-SPEED	2-SPEED	2-SPEED	4	2 - 3	BUOYANCY	°C
12	NONE	2-SPEED	2-SPEED	2-SPEED	4	2 - 3	NON-SWIM	°C

INSTEAD OF SETUP #1, THIS SYSTEM IS CONFIGURED IN SETUP #: ____

FOR SUPPLY CONNECTIONS, USE CONDUCTORS SIZED ON THE BASIS OF 60°C AMPACITY BUT RATED MINIMUM OF 90°C.

USE COPPER CONDUCTORS ONLY.
EMPLOYER UNIQUEMENT
DES CONDUCTEURS DE CUIVRE.

TORQUE RANGE FOR MAIN TERMINAL BLOCK (TB1): 27-30 IN. LBS. (31.1-34.5 kg cm)

BALBOA water group

SSW21G1 - PN 59317-01
08-17-22

PART B

BALBOA water group

Setup Reference Table

Setup #	Circ Pump	Pump 1	Pump 2	Pump 3	Swim Speeds	Swim Pumps	Pump 1 Function	Temp Scale
1	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	6	1 - 3	Swim	°C
2	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	5	1 - 3	Swim	°C
3	None	2-Speed	2-Speed	2-Speed	6	1 - 3	Swim	°C
4	None	2-Speed	2-Speed	2-Speed	5	1 - 3	Swim	°C
5	Programmable Filtration + Polling	2-Speed	2-Speed	None	4	1 - 2	Swim	°C
6	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	4	2 - 3	Buoyancy	°C
7	Programmable Filtration + Polling	1-Speed	2-Speed	2-Speed	4	2 - 3	Buoyancy	°C
8	Programmable Filtration + Polling	2-Speed	2-Speed	2-Speed	4	2 - 3	Non-Swim	°C
9	Programmable Filtration + Polling	1-Speed	2-Speed	2-Speed	4	2 - 3	Non-Swim	°C
10	None	2-Speed	2-Speed	None	4	1 - 2	Swim	°C
11	None	2-Speed	2-Speed	2-Speed	4	2 - 3	Buoyancy	°C
12	None	2-Speed	2-Speed	2-Speed	4	2 - 3	Non-Swim	°C

System (and any replacement board) **is shipped in Setup 1**

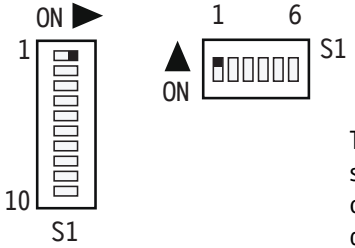
BALBOA water group

Changing Software Setups with spaTouch™ Icon-Driven Panels

Test Menu Access (S1, Switch 1 ON) *Service Technician ONLY.*

DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

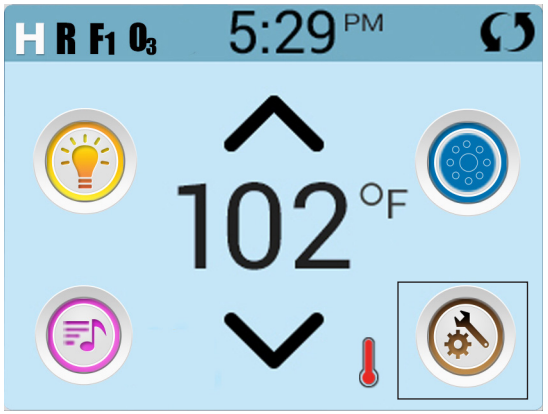
While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.
Moving DIP Switch 1 to OFF will exit Test Mode.

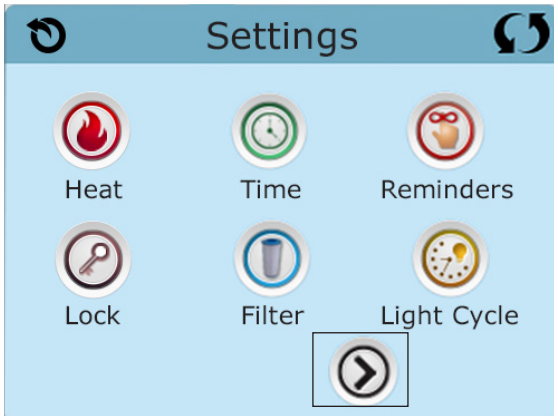


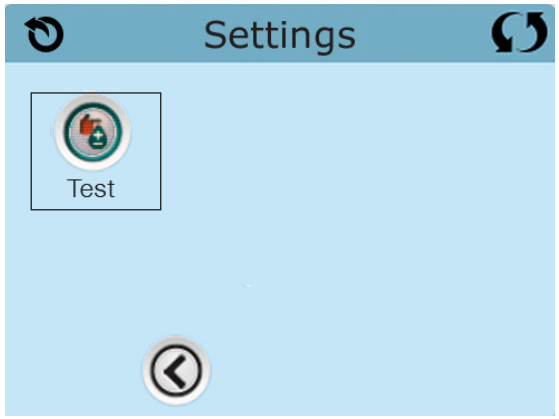
To Change Software Setups:

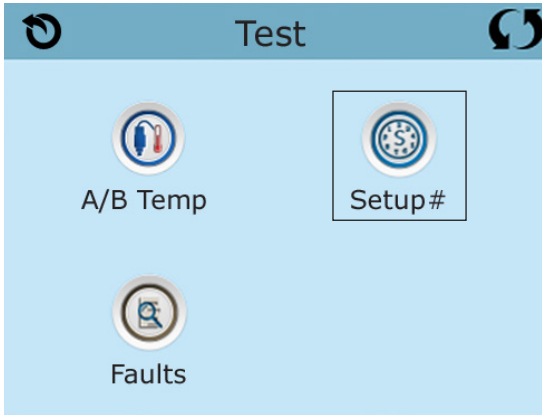
While in Test Mode, press the indicated icons to move from screen to screen.

The example screens shown here are from the spaTouch 1 Icon-Driven Panel, but the screens on the spaTouch 2 Panel are similar. The main difference is that the spaTouch 2 display is wider.



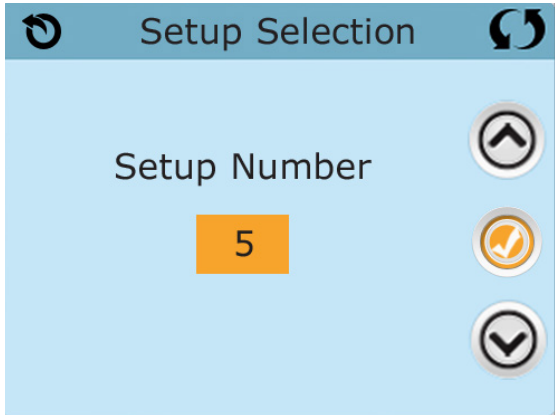






Once on the Setup Selection screen, press the Up or Down icon to select the desired Setup Number, then press the Check Mark icon to confirm and to have the spa restart.

After the system restarts, you may see a message that "The settings have been reset"; this is normal after changing Setups with DIP Switch 6 in the OFF position. Press "Clear" to dismiss this message.



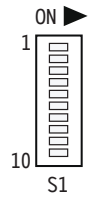
Equipment Expansion

Expansion Features

Control Connection	Default	Fuse
Relay 1 (J101)	Undefined	None
Relay 7/8 (J107)	Pump 3	30A
Relay 9/10 (J108)	Undefined	None

DIP Switch Functions

Fixed-fuction DIP Switches



A1	Test Mode (normally Off).
A2	In “ON” position, add one high-speed pump (or blower) with Heater.
A3	In “ON” position, add two high-speed pumps (or 1 HS Pump and Blower) with Heater.
A4	In “ON” position, add four high-speed pumps (or 3 HS Pumps and Blower) with Heater.
A5	In “ON” position, enables Special Amperage Rule B. See Special Features section under Configuration Options for functionality with your system. In “OFF” position, enables Special Amperage Rule A.
A6	Persistent memory reset (Used when the spa is powering up to restore factory settings as determined by software configuration).

A2, A3, and A4 work in combination to determine the number of high-speed devices and blowers that can run before the heat is disabled. i.e. A2 and A3 in the ON position and A4 in the OFF position will allow the heater to operate with up to 3 high-speed pumps (or two HS Pumps and Blower) running at the same time. Heat is disabled when the fourth high-speed pump or blower is turned on.

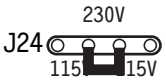
Note: *A2/A3/A4 all off = No heat with any high-speed pump or blower.*

Assignable DIP Switches

A7	In “ON” position, enables a 5-minute cooldown for some gas heaters (Cooling Time B). In “OFF” position, enables a 1-minute cooldown for electric heaters (Cooling Time A).

Undesignated switches are not assigned a function.

Jumper Definitions

J109	Non Applicable on CE models	
J91	Real Time Clock Enable/Disable ***Note:*** *This Jumper should NOT be shorted when the Control Panel can display time of day.*	
J30	Do Not Use	
J31	Jumper on 1 pin with 2.0kW or smaller heater Jumper on 2 pins with a 3.0kW or higher heater	
J29	Heater Disable Switch Connection. If J29 is shorted by any means, the heater will not run until J29 is no longer shorted. If J29 is shorted during power-up "J29" will appear on the panel. The message can be dismissed with a button press, and is the only control panel notification of J29 being shorted. No message is displayed if J29 is shorted after power-up, but the heater will not run until J29 is no longer shorted. J29 expects a switch closure (not a voltage) as the command signal. In some areas, a local power company may offer discounts based on voluntary "power shedding" devices that may be installed in conjunction with the spa.	
J25, J26, J27	Heater Type Settings. ***Note:*** *Factory Configured do not change.*	
J24	Jumper on center two pins (230V) when heater is running at 240V. Two Jumpers installed; one on left 2 pins and one on right 2 pins (115V) when heater is running at 120V.	

Warning!

Setting DIP switches or jumpers incorrectly may cause abnormal system behavior and/or damage to system components.
Refer to Switchbank illustration on Wiring Configuration page for correct settings for this system.
Contact Balboa if you require additional configuration pages added to this tech sheet.

Replacement Parts

PCBA:

Main PCBA:	59115-01
Expander PCBA:	59097

HEATER(s):

Plug + Click Heater Kit:	58107R16 3.0kW 825 Inc
	55626R16 3.0kW Titanium
Temp Sensor Kit:	53605

CABLES: N/A

FUSES:

Part Number	Amperage*	Location
30136	30A	F6, F8, F1 (Expander)
26307	2A	F4
24825	0.125A	F3
26904	10A	F2, F7
26976	3.15A	F5

* The amperages shown above are only intended for identifying fuses on our boards. They are not complete descriptions of those fuses. Please use the part numbers at the left to order fuses directly from Balboa.

BALBOA water group

BP2100 Configuration Options

General Features

Feature	Default
Pump 1 in Filter Cycle (Circ Only)	No
Pump 1 Low Timer	*15 Minutes*
General Pump Timer	15 Minutes
Blower Timer	15 Minutes
Mister Timer	15 Minutes
Light Timer	240 Minutes
Circ (when enabled)	Programmable + Polling
Cleanup Cycle	*30 Minutes*
Cleanup as Preference setting	*Yes*
Ozone	With Heater Pump*
Ozone Suppression	OFF
Pump Purge	60 Seconds
Blower Purge	30 Seconds
Mister Purge	5 Seconds
Purge Type	Serial - Pumps at lowest speed

* The heater Pump can be either a Circ Pump or Pump 1 Low.

BALBOA water group

BP2100 Configuration Options

Temperature Features

Feature	Default
Temperature Display	°C

All temperatures must be specified in °F. The system converts °F to °C dynamically. If Celsius is required for default settings, choose a desired °C value that (after rounding) corresponds to a Fahrenheit value.

°C	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
°F	39	41	43	45	46	48	50	52	54	55	57	59	61	63	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
°F	73	75	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	

Hi-Range Min. Set Temp	80°F
Hi-Range Max. Set Temp	104°F
Hi-Range Default Temp*	100°F
Lo-Range Min. Set Temp	50°F
Lo-Range Max. Set Temp	99°F
Lo-Range Default Temp*	70°F
Freeze Threshold	44°F
Freeze Type	Rotating - Pumps at Lowest Speed
Temp Lock Type	Temp + Settings

**May be changed by end-user (if enabled)*

BP2100 Configuration Options

Time Features

Feature	Default
Time Format*	24 Hour
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
Filter 2 Start Hour*	08:00 (8:00 AM)
Filter 2 Duration*	15 Minutes
Light Cycle	Disabled
Light Cycle Default*	OFF
Light Cycle Start Hour*	21:00 (9:00 PM)
Light Cycle Duration*	15 Minutes
Cooling Time A	1 Minute
Cooling Time B	5 Minutes

**May be changed by end-user (if enabled)*

BALBOA water group

BP2100 Configuration Options

Reminder Features

Feature	Default
Reminders Shown*	*Yes*
Check pH	*OFF*
Check Sanitizer	*OFF*
Clean Filter	30 Days
Test GFCI	*65 Days*
Drain Water	*100 Days*
Change Cartridge	OFF
Clean Cover	*OFF*
Treat Wood	*OFF*
Change Filter	365 Days

**May be changed by end-user (if enabled)*

BP2100 Configuration Options

Special Features

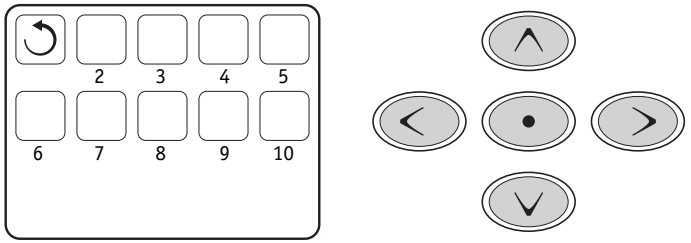
Feature	Default
Special Amperage Rule A	No Limitation
Special Amperage Rule B	No Limitation
Drain Mode	Disabled
Demo Mode	Disabled
GFCI Trip	Not Applicable for CE Models
Ozone Slaved to Heater Pump	*Yes in circ setups* *No in non-circ setups*
Dual Voltage Heater	Always Input Voltage
Safety Suction	Disabled
First Swim Pump	*Pump 1 in Setups 1 -5 & 10, Pump 2 in Setups 6 - 9, 11 & 12*
Swim Spa Behaviors (Setups 1, 3 & 5 - 12)	*Manifold*
Swim Spa Behaviors (Setups 2 & 4)	*Manifold + Skip First Speed*
Aux Swim Device	*Pump 1 in Setups 6, 7 & 11;* Disabled in all other Setups
Mode Default	Ready Mode
Range Default	*Low Range*

TP900 Panel Configuration

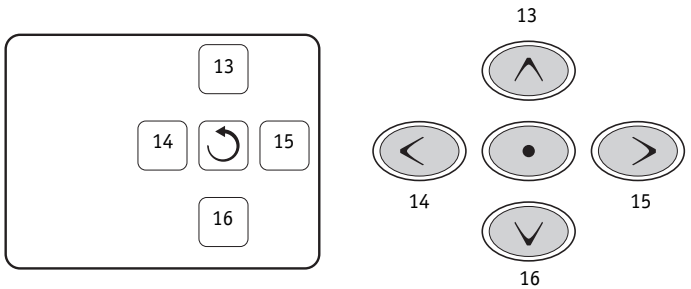
Button Layout Table

Feature #	Circ Setups 1, 2 & 5 - 9	Non-Circ Setups 3, 4 & 10 - 12
A1	N/A	N/A
A2	Jets 1	Jets 1
A3	Undefined	Undefined
A4	Undefined	Undefined
A5	Undefined	Undefined
A6	Light 1	Light 1
A7	Invert	Invert
A8	(Circ Icon)	Undefined
A9	Undefined	Undefined
A10	Undefined	Undefined
11	N/A	N/A
12	N/A	N/A
13	Undefined	Undefined
14	Undefined	Undefined
15	Undefined	Undefined
16	Undefined	Undefined

Spa Screen



Shortcuts Screen



A Circ Icon will appear when a Circ Pump is configured.

Note: TP900 support is included only to enable proper function of the spaTouch panel.

BP2100 Configuration Options

Auxiliary Panel Features on Bank 1*

Feature	Default
Aux Button A1	Swim Speed Down
Aux Button A2	Swim Speed Up
Aux Button A3	Swim Stop
Aux Button A4	Swim Pause

Auxiliary Panel Features on Bank 2*

Feature	Default
Aux Button A5	Swim Speed Up
Aux Button A6	Swim Pause
Aux Button A7	Swim Speed Down
Aux Button A8	Swim Stop

*Bank 1 is for use with an AX40 (horizontal layout) panel.
Bank 2 is for use with an AX42 (round layout) panel.

So if using an AX40, plug it into J5, but if using an AX42, plug it into J8.

Buttons that are assigned to equipment that is not defined in a Setup will not do anything in that Setup.

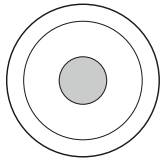
*Bank 1 consists of J5 on the Main Circuit Board.
Bank 2 consists of J8 on the Main Circuit Board.
Aux Connection Splitter PN 25257 may be required.

BP2100 Configuration Options

Auxiliary Panel Features

AX10 Panels on Bank 1*

A1, AX10A1	No O/L	52803
A2, AX10A2	No O/L	52804
A3, AX10A3	No O/L	52805 ▶
A4, AX10A4	No O/L	52806



Call Customer Service for additional information about Auxiliary Panels.

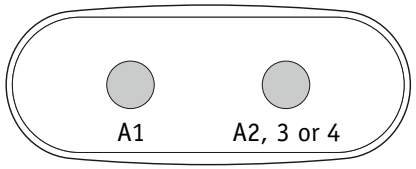
AX10 Panels on Bank 2*

A5, AX10A1	No O/L	52803
A6, AX10A2	No O/L	52804
A7, AX10A3	No O/L	52805
A8, AX10A4	No O/L	52806

*Bank 1 consists on J5 and J6 on the Main Circuit Board.
Bank 2 consists on J7 and J8 on the Main Circuit Board.
Aux Connection Splitter PN 25257 may be required.

AX20

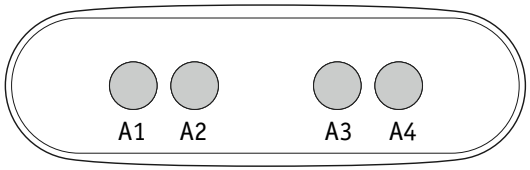
AX20 A1A2	No O/L	52800
AX20 A1A3	No O/L	52801
AX20 A1A4	No O/L	52802



AX20 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 or A4.
AX20 Auxiliary Panel plugged into Bank 2 will operate A5 + A6, A7 or A8.

AX40

AX40	No O/L	52799

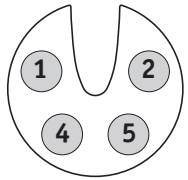


AX40 Auxiliary Panel plugged into Bank 1 will operate A1 + A2, A3 and A4.
AX40 Auxiliary Panel plugged into Bank 2 will operate A5 + A6, A7 and A8.

BP2100 Configuration Options

Remote Panel Features

Feature	Default
Remote Button A1	Undefined
Remote Button A2	Undefined
Remote Button A3	Undefined
Remote Button A4	Undefined
Remote Button A5	Undefined
Remote Button A6	Undefined
Remote Button A7	Undefined
Remote Button A8	Undefined



Buttons that are assigned to equipment that is not defined in a Setup will not do anything in that Setup.

Remote Panel Part Number _____

Overlay Part Number _____